

1 WHAT IS CLAIMED IS:

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3 1. A process for oligomerizing the olefins present in a Fischer-Tropsch
4 derived condensate containing a mixture of olefins and oxygenates
5 which comprises:

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7 (a) reducing significantly the oxygenates present in the
8 Fischer-Tropsch condensate;

9

10 (b) contacting the Fischer-Tropsch derived condensate having
11 significantly reduced oxygenates with an ionic liquid catalyst in
12 an oligomerization zone under oligomerization reaction
13 conditions; and

14

15 (c) recovering from the oligomerization zone a Fischer-Tropsch
16 derived product having molecules characterized by a higher
17 average molecular weight and increased branching as
18 compared to the Fischer-Tropsch derived condensate.

19

20 2. The process of claim 1 wherein substantially all of the oxygenates
21 present in the Fischer-Tropsch derived condensate are removed.

22

23 3. The process of claim 1 wherein the Fischer-Tropsch derived
24 condensate contains not more than about 200 ppmw elemental
25 oxygen.

26

27 4. The process of claim 3 wherein the Fischer-Tropsch derived
28 condensate contains not more than about 100 ppmw elemental
29 oxygen.

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31 5. The process of claim 1 wherein the oxygenates are removed by
32 contacting the Fischer-Tropsch derived condensate with an adsorbent
33 which is effective for removing the oxygenates.

- 1 6. The process of claim 5 wherein the adsorbent is a molecular sieve
2 having low silica to alumina ratio.
3
- 4 7. The process of claim 6 wherein the molecular sieve is a large pore
5 zeolite.
6
- 7 8. The process of claim 6 wherein the molecular sieve has an FAU type
8 framework.
9
- 10 9. The process of claim 7 wherein the molecular sieve is an X zeolite.
11
- 12 10. The process of claim 7 wherein the molecular sieve is a 13X molecular
13 sieve.
14
- 15 11. A process for preparing a Fischer-Tropsch derived product by the
16 oligomerization of the olefins in a Fischer-Tropsch derived concentrate
17 which contains olefins and oxygenates which comprises:
18
- 19 (a) dehydrating the Fischer-Tropsch derived concentrate in a
20 dehydration zone under dehydration conditions and recovering a
21 dehydrated Fischer-Tropsch derived condensate from the
22 dehydration zone;
23
- 24 (b) contacting the dehydrated Fischer-Tropsch derived condensate
25 with a molecular sieve capable of adsorbing the oxygenates
26 remaining in the dehydrated Fischer-Tropsch derived
27 condensate and recovering a Fischer-Tropsch derived
28 condensate intermediate containing significantly reduced
29 oxygenates;
30
- 31 (c) contacting the Fischer-Tropsch derived condensate intermediate
32 in an oligomerization zone with an effective oligomerizing
33 amount of a Lewis acid ionic liquid oligomerization catalyst while

- 1 maintaining said Fischer-Tropsch derived condensate
2 intermediate and said oligomerization catalyst under preselected
3 oligomerization conditions for a sufficient time to oligomerize the
4 olefins present; and
5
- 6 (d) recovering from the oligomerization zone a Fischer-Tropsch
7 derived product having molecules characterized by a higher
8 average molecular weight and increased branching as
9 compared to the Fischer-Tropsch derived condensate.
10
- 11 12. The process of claim 11 wherein substantially all of the oxygenates
12 present in the dehydrated Fischer-Tropsch derived condensate are
13 removed.
14
- 15 13. The process of claim 11 wherein the dehydrated Fischer-Tropsch
16 derived condensate contains not more than about 200 ppmw elemental
17 oxygen.
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- 19 14. The process of claim 13 wherein the dehydrated Fischer-Tropsch
20 derived condensate contains not more than about 100 ppmw elemental
21 oxygen.
22
- 23 15. The process of claim 11 wherein the adsorbent of step (b) is a
24 molecular sieve having low silica to alumina ratio.
25
- 26 16. The process of claim 15 wherein the molecular sieve of step (b) has an
27 FAU type framework.
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- 29 17. The process of claim 16 wherein the molecular sieve is an X zeolite.
30
- 31 18. The process of claim 16 wherein the molecular sieve of step (b) is a
32 13X molecular sieve.

- 1 19. The ~~process~~ of claim 11 wherein the Lewis acid ionic oligomerization
2 catalyst comprises a first component and a second component, said
3 first ~~comp~~ component comprising a compound selected from the group
4 ~~consisting~~ of aluminum halide, alkyl aluminum halide, gallium halide,
5 and ~~alkyl~~ gallium halide, and said second component is quaternary
6 ammonium or quaternary phosphonium salt.
- 7
- 8 20. The ~~process~~ of claim 19 wherein said first component is aluminum
9 halide ~~or~~ alkyl aluminum halide.
- 10
- 11 21. The ~~process~~ of claim 20 wherein said first component is aluminum
12 trichloride.
- 13
- 14 22. The ~~process~~ of claim 19 wherein said second component is selected
15 from ~~one~~ or more of hydrocarbyl substituted ammonium halide,
16 hydrocarbyl substituted imidazolium halide, hydrocarbyl substituted
17 pyridinium halide, alkylene substituted pyridinium dihalide, or
18 hydrocarbyl substituted phosphonium halide.
- 19
- 20 23. The ~~process~~ of claim 22 wherein the second component is an alkyl
21 substituted quaternary ammonium halide containing one or more alkyl
22 moieties having from 1 to about 9 carbon atoms.
- 23
- 24 24. The ~~process~~ of claim 23 wherein the second component comprises at
25 least ~~one~~ trimethylamine hydrochloride.
- 26
- 27 25. The ~~process~~ of claim 22 wherein the second component is an alkyl
28 substituted imidazolium halide.
- 29
- 30 26. The ~~process~~ of claim 25 wherein the second component comprises at
31 least 1-ethyl-3-methyl-imidazolium chloride.

- 1 27. The process of claim 22 wherein the ratio of first component to the
2 second component of the oligomerization catalyst is within the range of
3 from about 1:1 to about 5:1.
4
- 5 28. The process of claim 19 wherein the ratio of the first component to the
6 second component is within the range of from about 1:1 to about 2:1.
7
- 8 29. The process of claim 1 including the additional step of hydrogenating
9 the unsaturated double bonds present in the Fischer-Tropsch derived
10 product.
11
- 12 30. The process of claim 29 wherein the Fischer-Tropsch derived product
13 includes lubricating base oil.
14
- 15 31. The process of claim 29 wherein the Fischer-Tropsch derived product
16 includes a diesel product.